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Examiner Thu Ha T. Nguyen To:

Mail Stop AMENDMENT Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22213-1450

Fax: 703-872-9306

Enclosures:

Fax Cover Sheet containing Certificate of Facsimile Transmission (1 page) Transmittal containing Certificate of Facsimile Transmission (2 pages) Amendment After Final (12 pages)

From: Scott A. Stinebruner

Reg. No. 38,323

U.S. Patent Application Re:

Serial No. Filed:

09/697,398 October 27, 2000

Applicant: Art Unit:

Robert Miller et al. 2155 2827

Confirmation No.: Our Ref:

IBM/164

Pages: 15 (including cover sheet)

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Judith L Volk

June 3, 2004

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:

Robert Miller et al.

Art Unit:

2155

Serial No.:

09/697,398

Examiner:

Thu Ha T. Nguyen

Filed:

For

October 27, 2000

GROUP DATA SHARING DURING MEMBERSHIP CHANGE IN

CLUSTERED COMPUTER SYSTEM

Mail Stop AMENDMENT Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

#### AMENDMENT TRANSMITTAL

- 1. Transmitted herewith is an Amendment After Final.
- 2. Small Entity status of this application under 37 CFR 1.9 and 1.27 has been established by a verified statement previously submitted.
  - ☐ Enclosed is a verified statement to establish Small Entity status
  - Other than a Small Entity

#### 3. The fee has been calculated as shown below:

#### **CALCULATION OF FEES**

Fee:	Number of Claims After Amendment:		Previously Paid For:	No. Extra;	At Rate:	Amount:	
Total Claims	22	minus	24	0	\$18	\$0.00	
Independent Claims	8	minus	9	0	\$86	\$0.00	
MULTIPLE DEPENDENT CLAIM FEE \$290							
TOTAL FEE FOR CLAIMS:							

No additional fee for claims is required.

Page 1 of 2 Scrial No. 09/697,398 Transmittal for Amendment After Final of June 3, 2004 IBM Docket: RQC920000129US1 WH&E IBM/164

4.		Attach Please	hed is a check in the sum of \$ for additional claims. e charge my Deposit Account No. 23-3000 in the amount of \$							
5.	The p 1.136	roceed apply.	ings herein are for a patent application and the provisions of 37 CFR Complete (a) or (b) as applicable.							
		(a)	Applicant petitions for an extension of time under 37 CFR 1.136 for the total number of months checked below:							
-		0000	Ext. Mos. one month two months three months four months five months	Large entity \$ 110.00 \$ 420.00 \$ 950.00 \$1,480.00 \$2,010.00	Small entity \$ 55.00 \$ 210.00 \$ 475.00 \$ 740.00 \$1,005.00					
		Exte	nsion fee due with this r	equest:		\$				
		Meti	hod of Payment: Check enclosed in the amount of \$							
	If an additional extension of time is required, please consider this a petition therefore									
			(Check and complete the next item, if applicable)							
			An extension for months has already been secured and the fee paid thereof of \$ is deducted from the total fee due for the total months of extension now requested. Extension fee due with this request \$  OR							
		(b)	this conditional petit	ion is being n	on of time is required nade to provide for th verlooked the need fo	e possibility				
6.	Ø		y additional fee for claims or extension of time is required, charge unt No. 23-3000.							
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PATENT

IBM/164 Confirmation No. 2827

#### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Robert Miller et al.

Art Unit: 2155

Serial No.: 09/697,398

Examiner: Thu Ha T. Nguyen

Filed:

October 27, 2000

Atty. Docket No.: IBM/164

For:

GROUP DATA SHARING DURING MEMBERSHIP CHANGE IN

**CLUSTERED COMPUTER SYSTEM** 

#### AMENDMENT AFTER FINAL

Mail Stop AMENDMENT Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

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Sir:

In reply to the final Office Action dated May 7, 2004, please amend the aboveidentified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 11 of this paper.

Page 1 of 12 Serial No. 09/697,398 Amendment After First dated June 3, 2004 Reply to Office Action of May 7, 2004 IBM Docket ROC920000129US1 WH&R IBM/164

#### Listing of Claims:

- 1. (Currently Amended) A method of processing a request in a clustered computer system to organize a plurality of members into a group, the method comprising, in a local member from the plurality of members:
  - (a) locally determining within the local member whether the local member is a subgroup leader for a subgroup with which the local member is associated;
    - (b) if so, transmitting group data on behalf of the subgroup: and
  - (c) detecting in the local member whether the group data for the subgroup has already been transmitted by a previous subgroup leader, wherein transmitting the group data by the local member is performed only if the group data has not already been transmitted.
  - 2. (Canceled)
- 3. (Currently Amended) The method of claim 1. A method of processing a request in a clustered computer system to organize a plurality of members into a group; the method comprising, in a local member from the plurality of members:

  locally determining within the local member whether the local member is a subgroup leader for a subgroup with which the local member is associated;

  if so, transmitting group data on behalf of the subgroup; and detecting in the local member whether the group data for the subgroup has already been transmitted by a previous subgroup leader, wherein transmitting the group data by the local member is performed only if the group data has not already been transmitted; and wherein detecting whether the group data for the subgroup has already been transmitted by a previous subgroup leader includes

Page 2 of 12 Serial No. 09/697,398 Amendment After Final dated June 3, 2004 Reply to Office Action of May 7, 2004 IBM Docket ROC920000129US1 WH&E IBM/164 Kilbmi 164/Amendment After Final wpd accessing a local indicator that indicates whether the group data for the subgroup has already been transmitted, the method further comprising, in the local member: clearing the local indicator in response to receipt of the request;

and

plurality of members;

setting the local indicator in response to receipt of group data for the subgroup by the local member.

- 4. (Original) The method of claim 1, further comprising, in the local member:
- (a) sending an acknowledgment message during an acknowledgment round:
- (b) waiting for receipt of an acknowledgment message from each of the plurality of members; and
- (c) processing the group data after receipt of acknowledgment messages from each of the plurality of members.
- 5. (Currently Amended) The method of claim 4, further comprising, in the local member: A method of processing a request in a clustered computer system to organize a plurality of members into a group, the method comprising, in a local member from the plurality of members:

locally determining within the local member whether the local member is a subgroup leader for a subgroup with which the local member is associated; if so, transmitting group data on behalf of the subgroup; sending an acknowledgment message during an acknowledgment round; waiting for receipt of an acknowledgment message from each of the

processing the group data after receipt of acknowledgment messages from each of the plurality of members;

Page 3 of 12 Serial No. 09/697,398 Amendment After Final dated June 3, 2004 Reply to Office Action of May 7, 2004 IBM Docket ROC920000129USI WHAE IBM/164 KWph/164Amendment After Final word

- (a) receiving a message identifying a failed member among the plurality of members; and
- (b) in response to receiving the message identifying the failed member, identifying the failed member, locally determining whether the local member is the subgroup leader for the subgroup subsequent to the failure of the failed member, and transmitting group data on behalf of the subgroup using the local member if the group data for the subgroup has not yet been transmitted.
- 6. (Original) The method of claim 5, wherein receiving the message identifying the failed member includes receiving a membership change message that is automatically generated responsive to failure of the failed member.
- 7. (Original) The method of claim 4, wherein sending the acknowledgment message is performed subsequent to the local member transmitting the group data on behalf of the subgroup if the local member is determined to be the subgroup leader, the method further comprising bypassing the transmitting of the group data by the local member if the local member is determined not to be the subgroup leader.
- 8. (Original) The method of claim 1, wherein locally determining within the local member whether the local member is the subgroup leader includes comparing a unique characteristic of the local member with those of the other members associated with the subgroup.
- 9. (Original) The method of claim 8, wherein the unique characteristic of the local member includes a member name, and wherein locally determining whether the local member is the subgroup leader includes determining whether the local member is the lowest named member among the members associated with the subgroup.

Page 4 of 12
Serial No. 09/697,398
Amendment After Final dated June 3, 2004
Reply to Office Action of May 7, 2004
IBM Docket ROC920000129USI
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10. (Original) The method of claim 1, wherein the request comprises a join request, wherein the plurality of members is partitioned into first and second subgroups, the first group associated with existing members of the group, and the second subgroup associated with new members to be added to the group responsive to the join request.

- 11. (Original) The method of claim 1, wherein the request comprises a merge request, wherein the plurality of members is partitioned into a plurality of subgroups, each subgroup associated with a partition, and each partition associated with a subset of the plurality of the members.
- 12. (Currently Amended) A method of processing a request in a clustered computer system to organize a plurality of members into a group, the plurality of members partitioned into a plurality of subgroups, the method comprising:
  - (a) transmitting group data on behalf of each subgroup; and
  - (b) locally tracking within each member whether the group data for the subgroup associated with such member has been transmitted;

locally determining within each member whether the member is a subgroup leader for the subgroup with which the member is associated; and

if the member is a subgroup leader and the group data for the subgroup associated with the member has not been transmitted, transmitting with the member the group data on behalf of the subgroup.

- 13. (Canceled).
- 14. (Currently Amended) The method of claim 12, A method of processing a request in a clustered computer system to organize a plurality of members into a group; the plurality of members partitioned into a plurality of subgroups, the method comprising:

Page 5 of 12 Scrial No. 09/697,398 Amendment After Final dated June 3, 2004 Reply to Office Action of May 7, 2004 IBM Docket ROC920000129US1 WHAE IBM/164 locally tracking within each member whether the group data for the subgroup associated with such member has been transmitted;

locally determining within each member whether the member is a subgroup leader for the subgroup with which the member is associated; and if the member is a subgroup leader and the group data for the subgroup associated with the member has not been transmitted, transmitting with the member the group data on behalf of the subgroup; wherein locally tracking within each member whether the group data for the subgroup associated with such member has been transmitted includes, for each member:

clearing a local indicator in response to receipt of the request; and setting the local indicator in response to receipt of group data for the subgroup associated with such member.

- 15. (Original) A method of processing a request in a clustered computer system to organize a plurality of members into a group, the plurality of members partitioned into a plurality of subgroups, the method comprising, for each subgroup:
  - (a) determining a subgroup leader for such subgroup via a local determination made within each active member associated with such subgroup;
  - (b) determining within the subgroup leader for such subgroup whether group data has already been transmitted on behalf of such subgroup;
  - (c) if group data has not already been transmitted on behalf of such subgroup, transmitting the group data using the subgroup leader;
  - (d) performing an acknowledgment round to detect any failed members; and
  - (e) repeating the determination of the subgroup leader for such subgroup, the determination of whether group data has already been transmitted, the

Page 6 of 12 Serial No. 09/697,398 Amendment After Final dated June 3, 2004 Reply to Office Action of May 7, 2004 IBM Docket ROC920000129US1 WH&E IBM/164 transmission of the group data if no such group data has been transmitted, and the performance of the acknowledgment round until no failed members are detected in response to a last performed acknowledgment round.

- 16. (Currently Amended) An apparatus, comprising:
  - (a) a memory; and
- (b) a program resident in the memory, the program configured to process a request in a clustered computer system to organize a plurality of members into a group by locally determining for a local member among the plurality of members whether the local member is a subgroup leader for a subgroup with which the local member is associated, and if so, transmitting group data on behalf of the subgroup, wherein the program is further configured to detect whether the group data for the subgroup has already been transmitted by a previous subgroup leader, and wherein the program is configured to transmit the group data only if the group data has not already been transmitted.
- 17. (Canceled).
- 18. (Currently Amended) <u>The apparatus of claim 16.</u> An apparatus, comprising:

  (a) a memory, and
- (b) a program resident in the memory, the program configured to process a request in a clustered computer system to organize a plurality of members into a group by locally determining for a local member among the plurality of members whether the local member is a subgroup leader for a subgroup with which the local member is associated, and if so, transmitting group data on behalf of the subgroup, wherein the program is further configured to detect whether the group data for the subgroup has already been transmitted by a previous subgroup leader,

Page 7 of 12 Serial No. 09/697,398 Amendment After Final dated June 3, 2004 Reply to Office Action of May 7, 2004 IBM Docket ROC920000129USI WH&E IBM/164 and wherein the program is configured to transmit the group data only if the group data has not already been transmitted, wherein the program is configured to detect whether the group data for the subgroup has already been transmitted by a previous subgroup leader by accessing a local indicator that indicates whether the group data for the subgroup has already been transmitted, and wherein the program is further configured to clearing the local indicator in response to receipt of the request and set the local indicator in response to receipt of group data for the subgroup.

- 19. (Original) The apparatus of claim 16, wherein the program is further configured to send an acknowledgment message during an acknowledgment round, wait for receipt of an acknowledgment message from each of the plurality of members, and process the group data after receipt of acknowledgment messages from each of the plurality of members.
  - 20. (Original) The apparatus of claim 19, An apparatus, comprising:
    - (a) a memory; and
  - (b) a program resident in the memory, the program configured to process a request in a clustered computer system to organize a plurality of members into a group by locally determining for a local member among the plurality of members whether the local member is a subgroup leader for a subgroup with which the local member is associated, and if so, transmitting group data on behalf of the subgroup, wherein the program is further configured to send an acknowledgment message during an acknowledgment round, wait for receipt of an acknowledgment message from each of the plurality of members, and process the group data after receipt of acknowledgment messages from each of the plurality of members, and wherein the program is further configured to receive a message identifying a

Page 8 of 12
Serial No. 09/697,398
Amendment After Final dated June 3, 2004
Reply to Office Action of May 7, 2004
IBM Docket ROC920000129US1
WH&E IBM/164
KUbm/16/Amendment After Final wpd

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failed member among the plurality of members, and in response to receiving the message identifying the failed member, identify the failed member, locally determine whether the local member is the subgroup leader for the subgroup subsequent to the failure of the failed member, and transmit group data on behalf of the subgroup if the group data for the subgroup has not yet been transmitted.

- 21. (Original) The apparatus of claim 16, wherein the program is configured to locally determine whether the local member is the subgroup leader by determining whether the local member is a lowest named member among the members associated with the subgroup.
  - 22. (Currently Amended) A clustered computer system, comprising:
    - (a) a plurality of nodes coupled to one another over a network;
  - (b) a plurality of member jobs defining a group and configured to be executed by at least one of the plurality of nodes; and
  - (c) a program configured to be executed by at least one of the plurality of nodes to process a request received by a member job from the plurality of member jobs to add another member job to the group by locally determining for the member job whether the member job is a subgroup leader for a subgroup with which the member job is associated, and if so, transmitting group data on behalf of the subgroup, wherein the program is further configured to detect whether the group data for the subgroup has already been transmitted by a previous subgroup leader, and wherein the program is configured to transmit the group data only if the group data has not already been transmitted.

Page 9 of 12 Serial No. 09/697,398 Amendment After Final dated June 3, 2004 Reply to Office Action of May 7, 2004 IBM Docket ROC920000129US1 WH&E IBM/164 EXbbh/164/unendpent After Final wpd JUN-03-2004 15:51 513 241 6234 P.13

- 23. (Currently Amended) A program product, comprising:
- (a) a program configured to process a request in a clustered computer system to organize a plurality of members into a group by locally determining for a local member among the plurality of members whether the local member is a subgroup leader for a subgroup with which the local member is associated, and if so, transmitting group data on behalf of the subgroup, wherein the program is further configured to detect whether the group data for the subgroup has already been transmitted by a previous subgroup leader, and wherein the program is configured to transmit the group data only if the group data has not already been transmitted; and
  - (b) a signal bearing medium bearing the program.
- 24. (Original) The program product of claim 23, wherein the signal bearing medium includes at least one of a recordable medium and a transmission medium.

Page 10 of 12 Serial No. 09/697,398 Amendment After Final dated June 3, 2004 Reply to Office Action of May 7, 2004 IBM Docket ROC920000129US1 WH&E IBM/164 K-Vbm/164/Mendment After Final wpd .

#### REMARKS

This paper is submitted in reply to the final Office Action dated May 7, 2004, within the three-month period for response. Reconsideration and allowance of all pending claims are respectfully requested.

In the subject Office Action, claims 1, 4, 8-9, 11-12, 16, 19, and 21-24 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Publication No. 2003/0041138 to Kampe et al. In addition, claim 7 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kampe et al., and claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kampe et al. in view of U.S. Patent No. 6,108,699 to Moiin. The Examiner did indicate, however, that claims 2-3, 5-6,13-15, 17-18, and 20 were directed to patentable subject matter.

Applicants respectfully traverse the Examiner's rejections to the extent that they are maintained. Nonetheless, Applicants have amended all of the claims to recite subject matter found to be allowable by the Examiner. Applicants do reserve the right to refile claims directed to the canceled subject matter in a future copending application.

In particular, independent claims 1, 12 and 16 have been amended to incorporate the subject matter of objected-to claims 2, 13 and 17, and these latter claims have been canceled without prejudice. Furthermore, claims 3, 14 and 18, which originally depended from objected-to claims 2, 13 and 17, but which were later amended to independent form in Applicants' prior response and allowed by the Examiner, have now been amended essentially back to their original form, but now depending from claims 1, 12 and 16.

In addition, claims 5 and 20, which were also indicated to be directed to allowable subject matter, have now been amended to independent form, as well as to clarify the nature of the recited received message as "identifying the failed member," which of note, is not for a reason related to patentability. Finally, independent claims 22 and 23 have been amended to incorporate the subject matter of claim 17, which was found to be allowable by the Examiner.

Page 11 of 12 Scriat No. 09/697,398 Amendances After Final dated June 3, 2004 Reply to Office Action of May 7, 2004 IBM Docket ROC920000129US1 WH&R IBM/164 K-Namid-Amendment After Final and Applicants respectfully request that the Examiner enter these amendments on the record pursuant to 37 C.F.R. 1.116(a), as the amendments do not raise any new issues, and merely incorporate subject matter previously found to be allowable over the prior art of record. Furthermore, based upon the acknowledged patentability of the subject matter of claims 2-3, 5-6, 13-15, 17-18, and 20 by the Examiner, Applicant respectfully submits that claims 1, 3-12, 14-16 and 18-24 are now in condition for allowance. Reconsideration and allowance these claims are therefore respectfully requested. If the Examiner has any questions regarding the foregoing, or which might otherwise further this case onto allowance, the Examiner may contact the undersigned at (513) 241-2324. Moreover, if any other charges or credits are necessary to complete this communication, please apply

3 JUNE 2004

them to Deposit Account 23-3000.

Date

Respectfully submitted,

Scott A. Stinebruner

Reg. No. 38,323

WOOD, HERRON & EVANS, L.L.P.

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Page 12 of 12
Serial No. 09/697,398
Amendment After Final dated June 3, 2004
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K-Ubr/1640Amendment After Final.wpd